Name: Date:

Polynomial Factoring solution (version 698)

1. **The quadratic formula says if $ax^2 + bx + c = 0$ then $x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$. Use the quadratic formula to solve the following equation.**

$$x^2 + 2x + 19 = 0$$

Simplify your answer(s) as much as possible.

Solution

$$x = \frac{-(2) \pm \sqrt{(2)^2 - 4(1)(19)}}{2(1)}$$

$$x = \frac{-(2) \pm \sqrt{4 - 76}}{2(1)}$$

$$x = \frac{-2 \pm \sqrt{-72}}{2}$$

$$x = \frac{-2 \pm \sqrt{-36 \cdot 2}}{2}$$

$$x = \frac{-2 \pm 6\sqrt{2}\, i}{2}$$

$$x = -1 \pm 3\sqrt{2}\, i$$

Notice that i in NOT under the square-root radical symbol!!

2. **Express the product of $-8 - 9i$ and $2 - 3i$ in standard form ($a + bi$).**

Solution

$$(-8 - 9i) \cdot (2 - 3i)$$

$$-16 + 24i - 18i + 27i^2$$

$$-16 + 24i - 18i - 27$$

$$-16 - 27 + 24i - 18i$$

$$-43 + 6i$$

Polynomial Factoring solution (version 698)

3. **Write function $f(x) = x^3 + 11x^2 + 36x + 36$ in factored form. I'll give you a hint: one factor is $(x + 6)$.**

Solution

	1	11	36	36
-6		-6	-30	-36
	1	5	6	0

$$f(x) = (x+6)(x^2+5x+6)$$

$$f(x) = (x+6)(x+3)(x+2)$$

4. **Polynomial p is defined below in factored form.**

$$p(x) = -(x+5)\cdot(x+1)^2\cdot(x-4)^2$$

Sketch a graph of polynomial $y = p(x)$.